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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/537,788	06/06/2005	Koichi Sato	03500.018152.	6628

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EXAMINER	
MARTIN, LAURA E	

ART UNIT	PAPER NUMBER
2853	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/537,788	SATO ET AL.	
	Examiner	Art Unit	
	LAURA E. MARTIN	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 May 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *12 and 14-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12 and 14-23* is/are rejected.

7)☒ Claim(s) *24 and 25* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 June 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 12, 14-18 and 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takizawa et al. (US 5990227 A) in view of Yatake et al. (WO 01/94482 A1).

The US version (US 2003/0097961 A1) will be used as a translation of WO 01/94482 A1) for Yatake et al. Wierenga et al. (US 5399296 A) is referenced with respect to the pKa value of maleic acid.

Takizawa et al. disclose the following claim limitations:

As per claim 12: method for applying to a recording medium a liquid consisting of a first liquid composition and a second liquid composition, each of the liquid compositions comprising a functional substance (colorant), an amphiphilic block copolymer (styrene-acrylic acid and methylvinylether-monoethyl maleate), and a liquid medium (water) (column 30, line 47 - column 31, line 10), with a pH and a pKa of an organic acid group (acrylic acid and maleic acid) or a salt of the organic acid group of the copolymer of the first liquid composition being different than a pH and a pKa of an organic acid group or a salt of the organic acid group of the copolymer of the second liquid composition (Wierenga et al. (US 5399296 A) discloses acrylic acid having a pKa

of 4.26 and maleic acid having a pKa of 2.0), wherein an increase in viscosity of the first liquid composition is caused by a decrease in pH of the first liquid composition on contact with the second liquid composition (column 2, line 63 – column 3, line 7), wherein the first liquid composition is greater than the second liquid composition in pH of the liquid compositions (column 33, lines 25-35; black is the first ink and any of the colored inks could be the second ink), and an increase in viscosity of the first liquid composition is caused by a decrease in pH of the first liquid composition on contact with the second liquid composition (it would have been obvious to one of ordinary skill in the art at the time of the invention that when two inks having different pH values were mixed, a change in pH would occur in both such that the pH of the first liquid would decrease and the pH of the second liquid would increase).

As per claim 18: the amphiphilic block copolymer has an alkenyl ether as a repeating monomer unit (methyl vinyl ether - column 30, line 47 – column 31, line 10).

As per claim 20: the functional substance is a colorant (column 30, line 47-column 31, line 10).

As per claim 21: an apparatus for liquid application, comprising a liquid applying means for applying the liquid (figure 1, element 65) and a driving means for driving the liquid applying means (figure 1, element 68).

Takizawa et al. do not disclose the following claim limitations:

As per claim 12: the first liquid composition is greater than the second liquid composition in pKa of the organic acid group of the copolymers and the organic acid of the copolymer of the second liquid composition is a sulfonic acid.

As per claim 14: the difference between the pKa of the organic acid groups or the salts of the organic acid groups contained in the copolymers of the first and second compositions is 0.3 or more.

As per claim 15: the difference between the pKa of the organic acid groups or the salts of the organic acid groups contained in the copolymers is 2 or more.

As per claim 16: the pKa of at least one of the organic acid groups or the salts of the organic acid groups is 2 or less.

As per claim 17: the organic acid groups of the copolymer of the first liquid composition are selected from benoic acid groups, aliphatic dicarboxylic acid groups, aromatic dicarboxylic acid groups, halogen-substituted benzoic acid groups, and sulfonic acid groups.

As per claim 22: the pKa of the sulfonic acid of the copolymer of the second liquid composition is not higher than zero.

As per claim 23: the organic acid of the first liquid composition is any one selected from the group consisting of benzoic acid, halogen-substituted benzoic acids, and sulfonic acids.

Yatake et al. disclose the following claim limitations:

As per claim 12: the first liquid composition is greater than the second liquid composition in pKa of the organic acid group of the copolymers and the organic acid of the copolymer of the second liquid composition is a sulfonic acid [0063] and [0066]. Wierenga et al. (US 5399296 A) discloses maleic acid having a pKa of 2.0, and applicant discloses sulfonic acid as having a pH of 0 or less such that if Takizawa were

modified by Yatake et al, the pKa of the organic acid in the first ink would be greater than the pKa of the organic acid in the second ink.

As per claim 14: the difference between the pKa of the organic acid groups or the salts of the organic acid groups contained in the copolymers of the first and second compositions is 0.3 or more [0063] and [0066]. Wierenga et al. (US 5399296 A) discloses maleic acid having a pKa of 2.0, and applicant discloses sulfonic acid as having a pKa of 0 or less such that if Takizawa were modified by Yatake et al, the pKa of the organic acid in the first ink would be greater than the pKa of the organic acid in the second ink by more than 0.3.

As per claim 15: the difference between the pKa of the organic acid groups or the salts of the organic acid groups contained in the copolymers is 2 or more (Wierenga et al. (US 5399296 A) discloses maleic acid having a pKa of 2.0).

As per claim 16: the pKa of at least one of the organic acid groups or the salts of the organic acid groups is 2 or less applicant discloses sulfonic acid as having a pKa of 0 or less).

As per claim 17: the organic acid groups of the copolymer of the first liquid composition are selected from benoic acid groups, aliphatic dicarboxylic acid groups, aromatic dicarboxylic acid groups, halogen-substituted benzoic acid groups, and sulfonic acid groups [0066] (each ink within the ink set of Yatake et al. can have any of the organic acids listed as part of a copolymer).

As per claim 22: the pKa of the sulfonic acid of the copolymer of the second liquid composition is not higher than zero (applicant discloses sulfonic acid as having a pH of 0 or less).

As per claim 23: the organic acid of the first liquid composition is any one selected from the group consisting of benzoic acid, halogen-substituted benzoic acids, and sulfonic acids [0066] (each ink within the ink set of Yatake et al. can have any of the organic acids listed as part of a copolymer).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink taught by Takizawa et al. with the disclosure of Yatake et al. to provide high quality images using an ink with excellent storage stability. It would have been obvious to one of ordinary skill in the art at the time of the invention that different amphiphilic co-polymers could be used in an ink set, as Yatake et al. discloses multiple co-polymers to be used in any of the inks, including a styrene-acrylic acid co-polymer, which is also taught to be in the yellow, cyan, and magenta inks of Takizawa et al.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takizawa et al. (US 5990227 A) and Yatake et al. (US 2003/0097961 A1), and further in view of Mishina et al. (US 6511534 B1).

Takizawa et al. as modified disclose the following the claim limitations:

As per claim 19: the method according to claim 12 and an amphiphilic block copolymer (column 30, line 47—column 31, line 10).

Takizawa et al. as modified do not disclose the following claim limitations:

As per claim 19: the functional substance is enclosed by a polymer.

Mishina et al. disclose the following claim limitations:

As per claim 19: the functional substance is enclosed by a polymer (column 16, lines 35-43).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method taught by Takizawa et al. as modified with the disclosure of Mishina et al. in order to provide strong fixing properties on a plurality of print medium surfaces.

Allowable Subject Matter

Claims 24 and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments with respect to claims 12 and 14-25 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAURA E. MARTIN whose telephone number is

(571)272-2160. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Laura E. Martin/
Examiner, Art Unit 2853